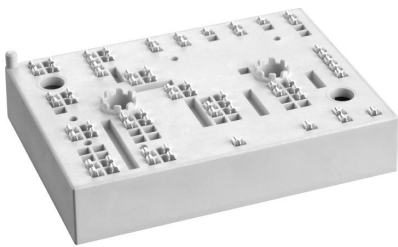


# SKiiP 38NAB12T4V1



## MiniSKiiP® 3

3-phase bridge rectifier +  
brake chopper + 3-phase  
bridge inverter  
SKiiP 38NAB12T4V1

### Features

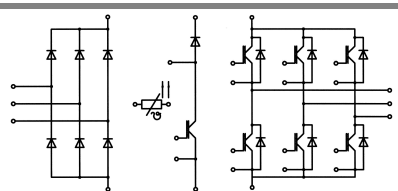
- Trench 4 IGBT's
- Robust and soft freewheeling diodes in CAL technology
- Highly reliable spring contacts for electrical connections
- UL recognised file no. E63532

### Typical Applications

- Inverter up to 41 kVA
- Typical motor power 22 kW

### Remarks

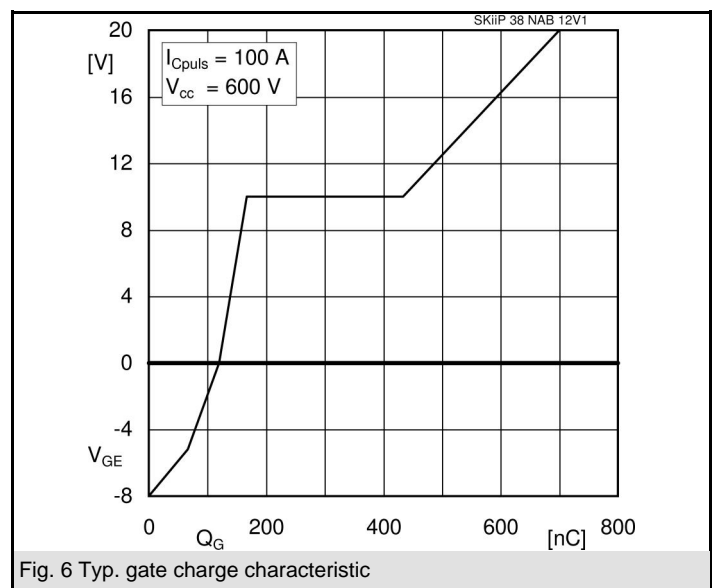
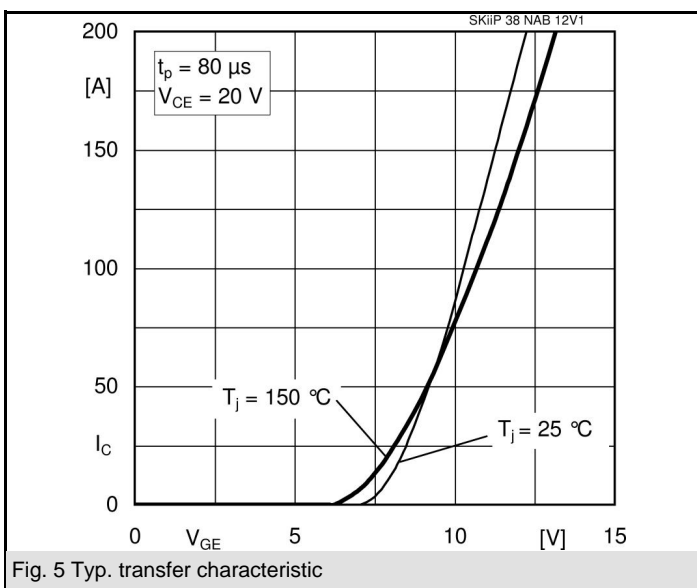
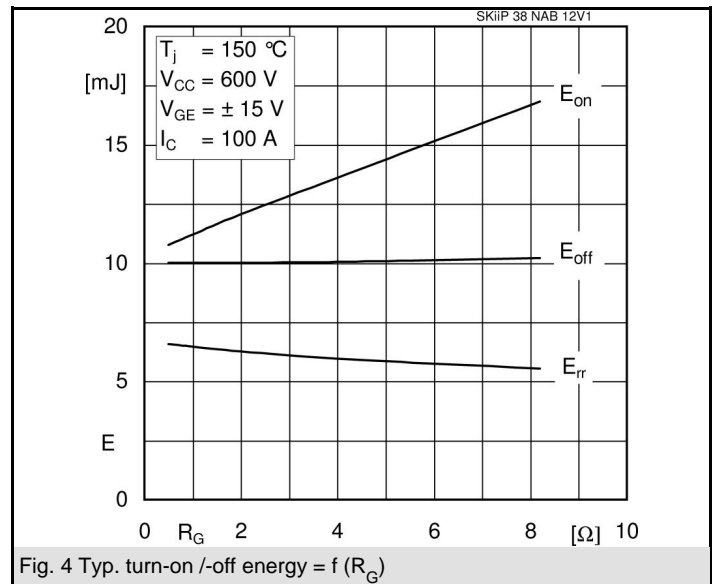
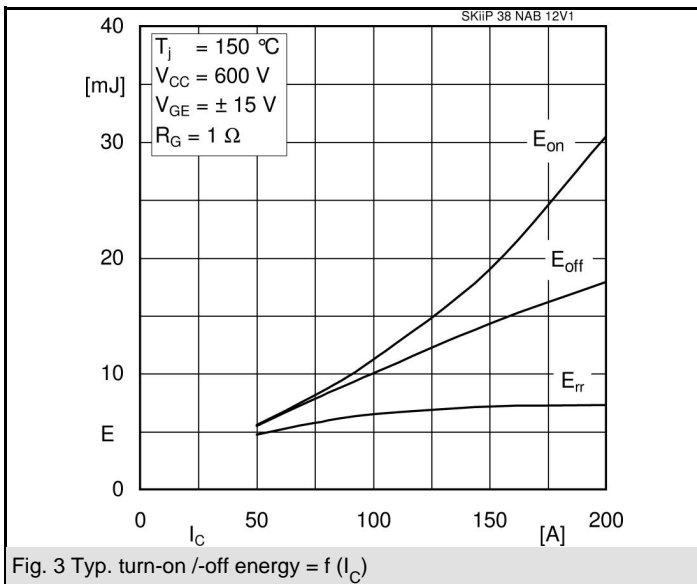
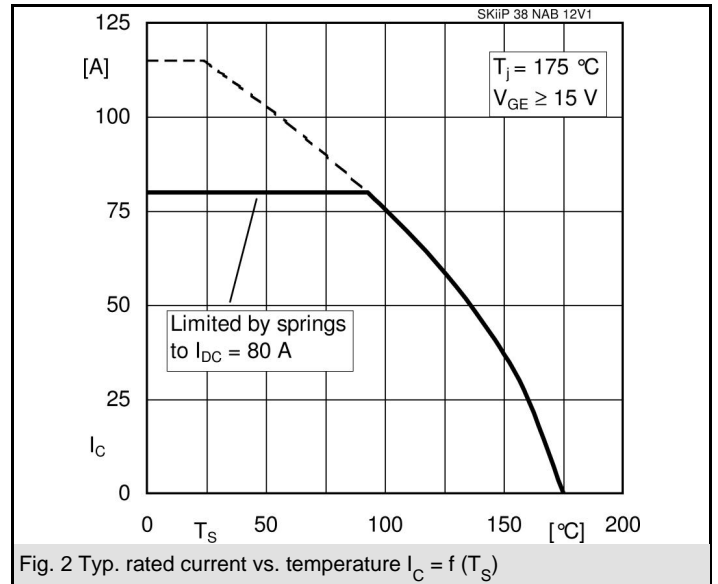
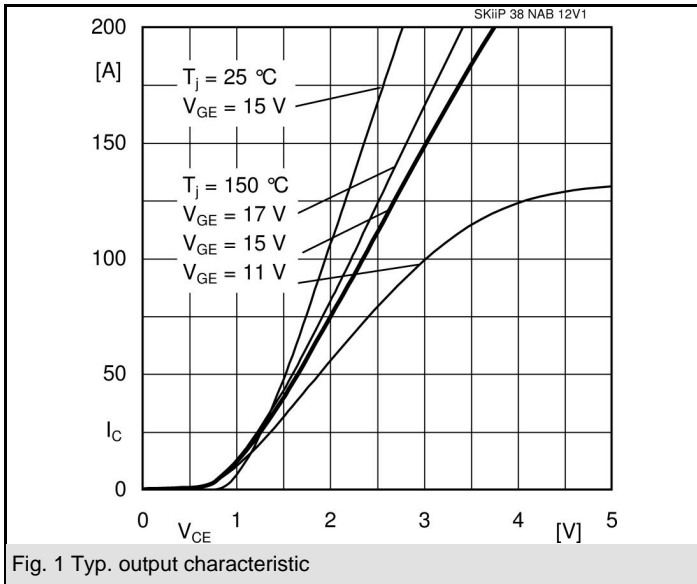
- $V_{CEsat}$ ,  $V_F$  = chip level value
- Case temp. limited to  $T_C = 125^\circ\text{C}$  max. (for baseplateless modules  $T_C = T_S$ )
- product rel. results valid for  $T_{j \leq 150}$  (recomm.  $T_{op} = -40 \dots +150^\circ\text{C}$ )
- for short circuit: Soft  $R_{Goff}$  recommended

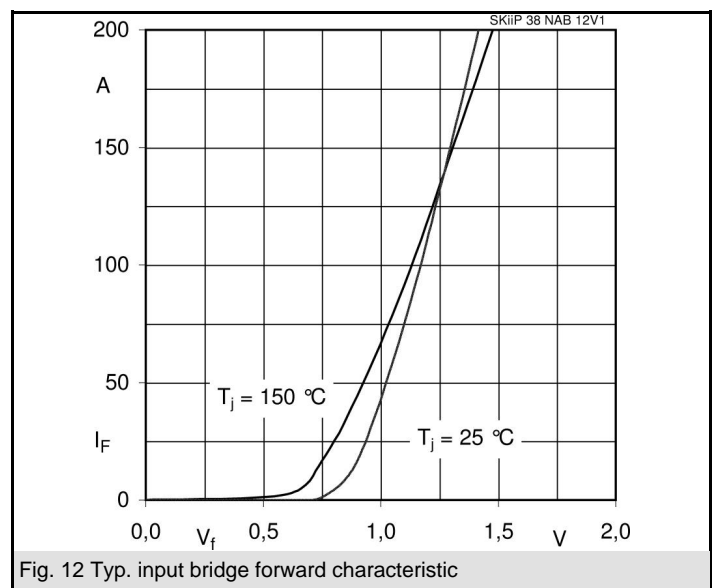
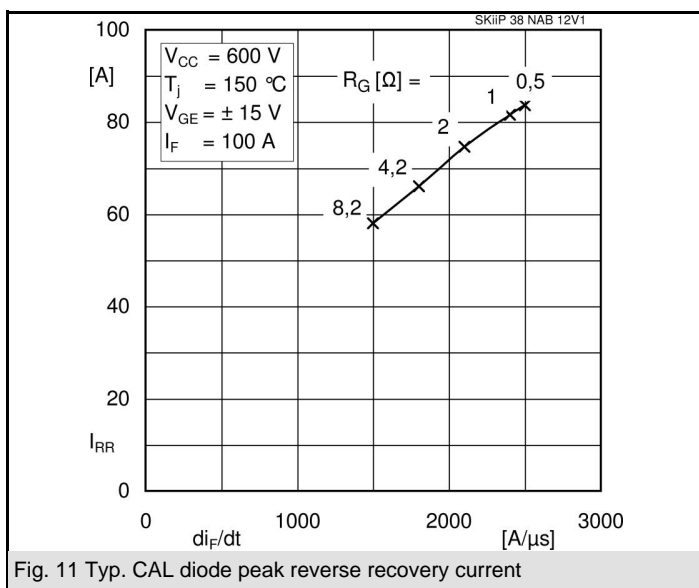
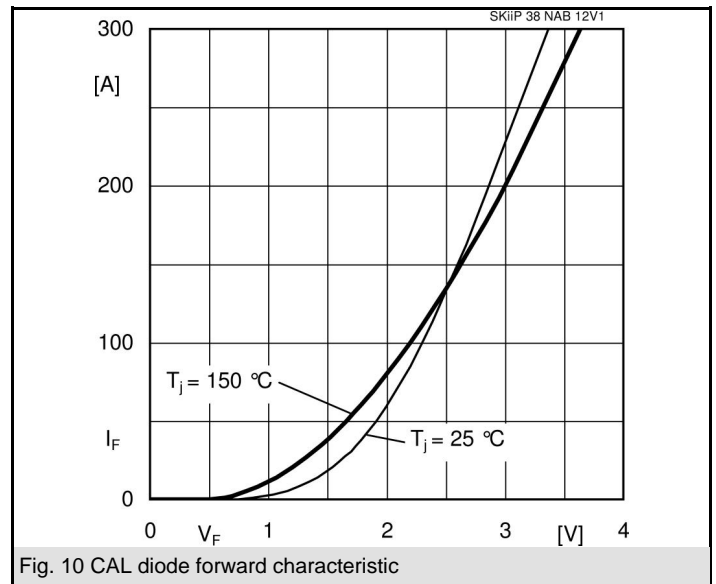
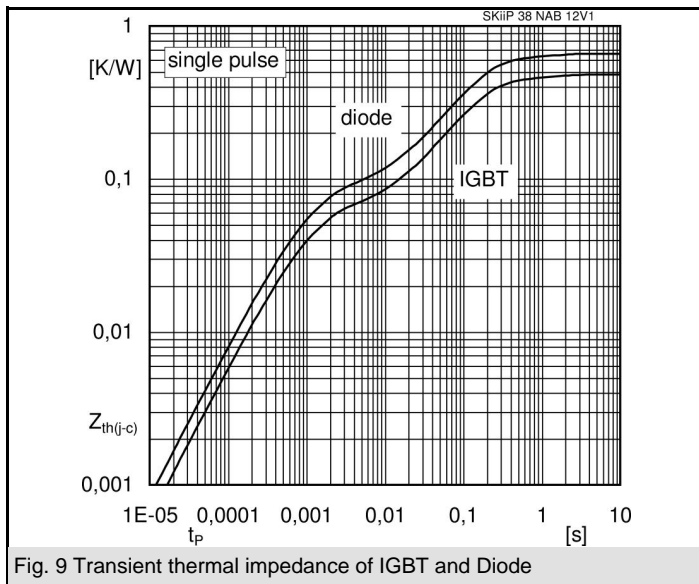
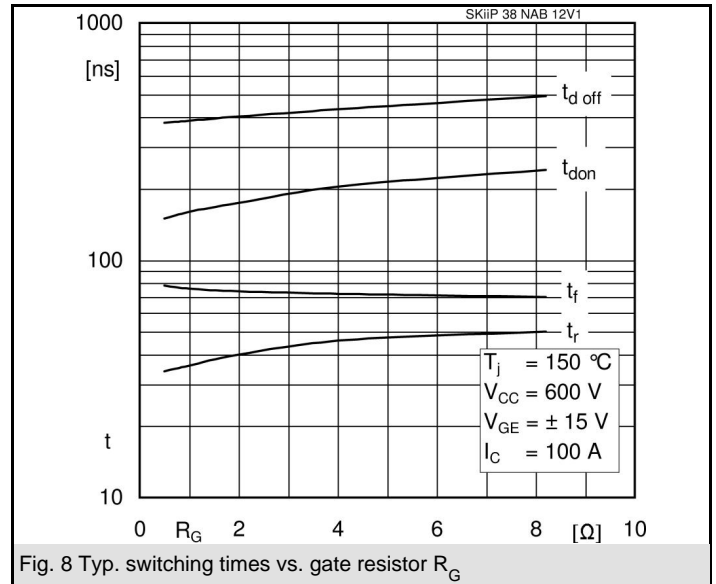
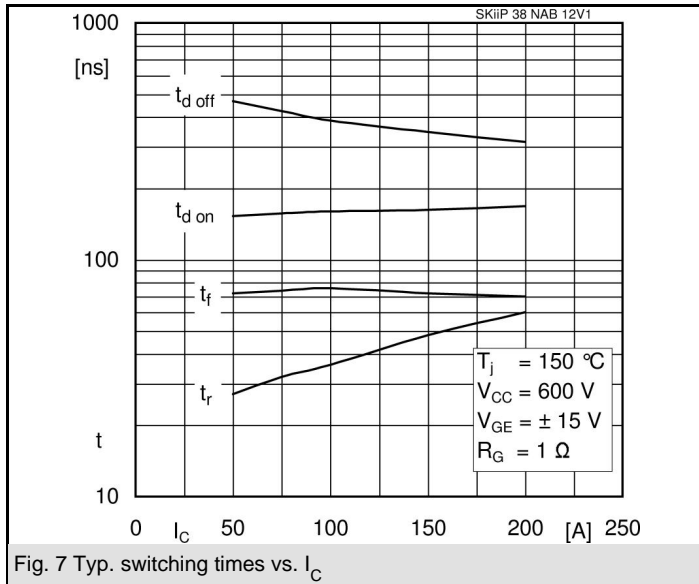


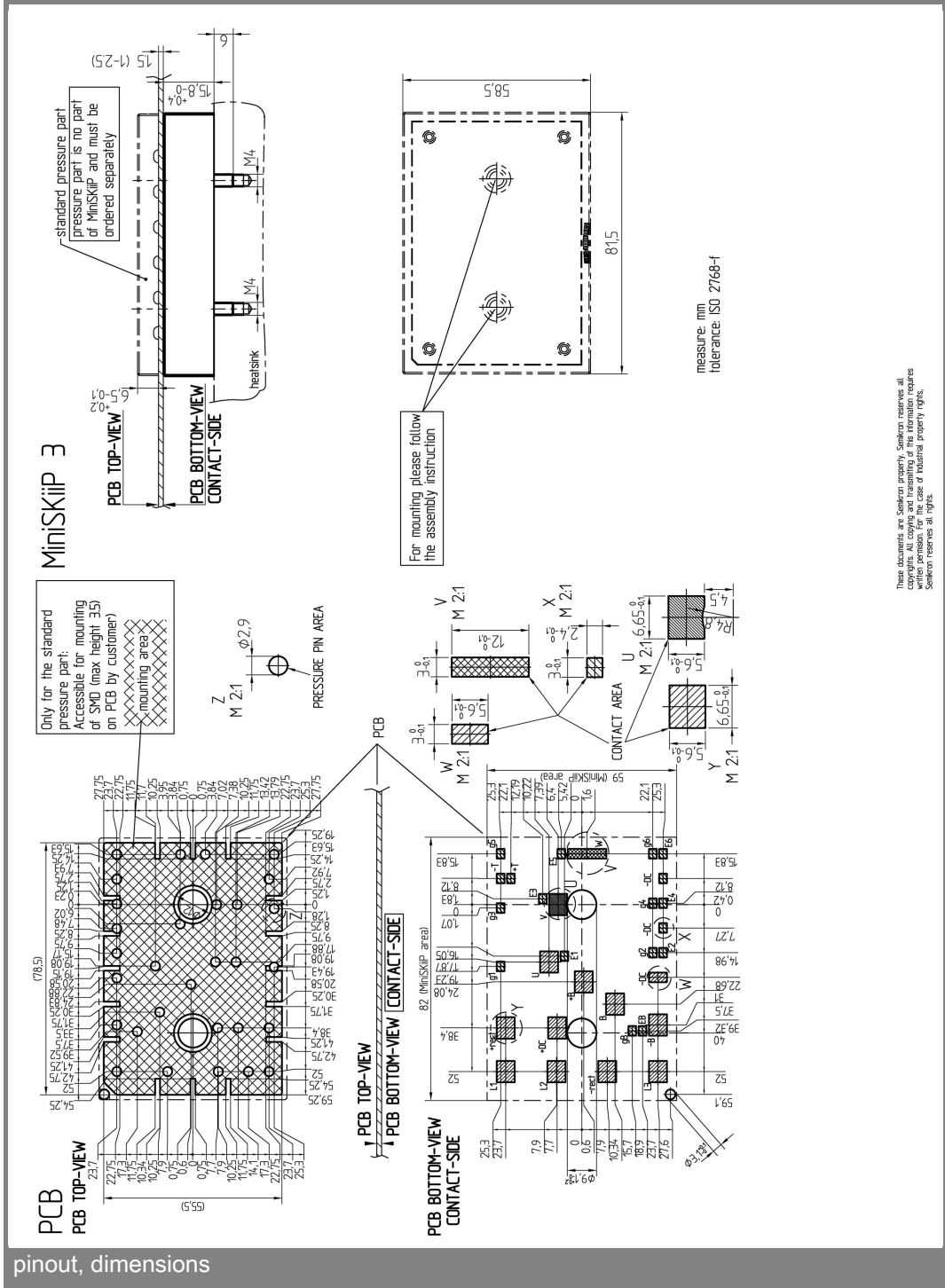
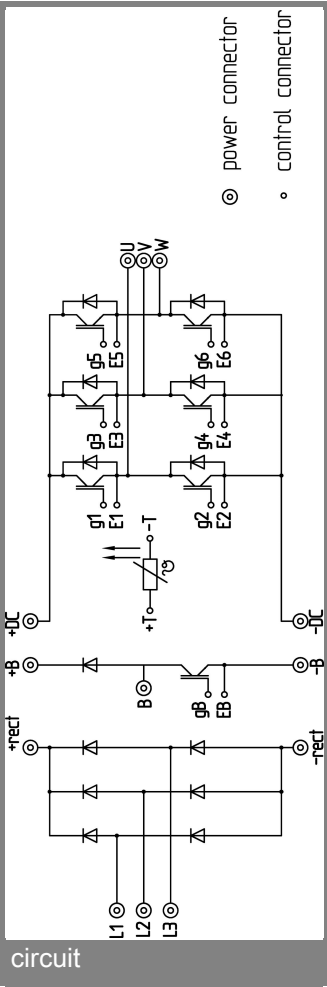
NAB

Absolute Maximum Ratings		$T_S = 25^\circ\text{C}$ , unless otherwise specified		
Symbol	Conditions	Values	Units	
<b>IGBT - Inverter, Chopper</b>				
$V_{CES}$	$T_S = 25 (70)^\circ\text{C}$	1200	V	
$I_C$		115 (93)	A	
$I_{CRM}$		300	A	
$V_{GES}$		$\pm 20$	V	
$T_j$		- 40 ... + 175	$^\circ\text{C}$	
<b>Diode - Inverter, Chopper</b>				
$I_F$	$T_S = 25 (70)^\circ\text{C}$	99 (79)	A	
$I_{FRM}$		300	A	
$T_j$		- 40 ... + 175	$^\circ\text{C}$	
<b>Diode - Rectifier</b>				
$V_{RRM}$	$T_S = 70^\circ\text{C}$	1600	V	
$I_F$		83	A	
$I_{FSM}$		$t_p = 10 \text{ ms, sin } 180^\circ, T_j = 25^\circ\text{C}$	1000	A
$i^2t$		$t_p = 10 \text{ ms, sin } 180^\circ, T_j = 25^\circ\text{C}$	6600	$\text{A}^2\text{s}$
$T_j$		- 40 ... + 150	$^\circ\text{C}$	
<b>Module</b>				
$I_{RMS}$	per power terminal (20 A / spring)	80	A	
$T_{stg}$		- 40 ... + 125	$^\circ\text{C}$	
$V_{isol}$	AC, 1 min.	2500	V	

Characteristics		$T_S = 25^\circ\text{C}$ , unless otherwise specified			
Symbol	Conditions	min.	typ.	max.	Units
<b>IGBT - Inverter, Chopper</b>					
$V_{CEsat}$	$I_{Cnom} = 100 \text{ A}, T_j = 25 (150)^\circ\text{C}$		1,8 (2,2)	2 (2,4)	V
$V_{GE(th)}$	$V_{GE} = V_{CE}, I_C = 4 \text{ mA}$	5	5,8	6,5	V
$V_{CE(TO)}$	$T_j = 25 (150)^\circ\text{C}$		0,8 (0,7)	0,9 (0,8)	V
$r_T$	$T_j = 25 (150)^\circ\text{C}$		10 (15)	11 (16)	$\text{m}\Omega$
$C_{ies}$	$V_{CE} = 25 \text{ V}, V_{GE} = 0 \text{ V}, f = 1 \text{ MHz}$		4,4		nF
$C_{oes}$	$V_{CE} = 25 \text{ V}, V_{GE} = 0 \text{ V}, f = 1 \text{ MHz}$		0,29		nF
$C_{res}$	$V_{CE} = 25 \text{ V}, V_{GE} = 0 \text{ V}, f = 1 \text{ MHz}$		0,24		nF
$R_{th(j-s)}$	per IGBT		0,48		K/W
$t_{d(on)}$	under following conditions		160		ns
$t_r$	$V_{CC} = 600 \text{ V}, V_{GE} = \pm 15 \text{ V}$		35		ns
$t_{d(off)}$	$I_{Cnom} = 100 \text{ A}, T_j = 150^\circ\text{C}$		390		ns
$t_f$	$R_{Gon} = R_{Goff} = 1 \Omega$		75		ns
$E_{on}$	inductive load		11,2		mJ
$E_{off}$			10		mJ
<b>Diode - Inverter, Chopper</b>					
$V_F = V_{EC}$	$I_{Fnom} = 100 \text{ A}, T_j = 25 (150)^\circ\text{C}$		2,2 (2,1)	2,5 (2,45)	V
$V_{(TO)}$	$T_j = 25 (150)^\circ\text{C}$		1,3 (0,9)	1,5 (1,1)	V
$r_T$	$T_j = 25 (150)^\circ\text{C}$		9 (12)	10 (14)	$\text{m}\Omega$
$R_{th(j-s)}$	per diode		0,66		K/W
$I_{RRM}$	under following conditions		82		A
$Q_{rr}$	$I_{Fnom} = 100 \text{ A}, V_R = 600 \text{ V}$		16,4		$\mu\text{C}$
$E_{rr}$	$V_{GE} = 0 \text{ V}, T_j = 150^\circ\text{C}$		6,5		mJ
	$di_F/dt = 2400 \text{ A}/\mu\text{s}$				
<b>Diode - Rectifier</b>					
$V_F$	$I_{Fnom} = 75 \text{ A}, T_j = 25^\circ\text{C}$		1,2		V
$V_{(TO)}$	$T_j = 150^\circ\text{C}$		0,8		V
$r_T$	$T_j = 150^\circ\text{C}$		7		$\text{m}\Omega$
$R_{th(j-s)}$	per diode		0,7		K/W
<b>Temperature Sensor</b>					
$R_{ts}$	3 %, $T_r = 25 (100)^\circ\text{C}$		1000(1670)		$\Omega$
<b>Mechanical Data</b>					
w			95		g
$M_s$	Mounting torque	2		2,5	Nm







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This is an electrostatic discharge sensitive device (ESDS), international standard IEC 60747-1, Chapter IX.

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